

of Nertschinsk, by Herr von Pischke.—On the coal formation in the Plauen district, by Dr. Geinitz.—*Section for Researches on Prehistoric Times*.—On the sepulchral mounds (dolmen) of Denmark, by Herr Jünger.—On some objects found recently in former Lake dwellings, by Herr Geinitz.—On the burying-places of Auvernier on the Neufchatel lake, by Prof. Desor.—On the composition of some mortars and face powders of the ancients, by Dr. Landerer.—On some tablets with interesting inscriptions recently found at Pompeii, by Sig. Fiorelli.—On the occurrence of artificially pointed sticks of wood in a layer of argillaceous coal in Switzerland, by Prof. Ecker.—Report of the last meeting of the German Anthropological Society at Munich, and remarks on the same, by Major Schuster.—*Zoological Section*.—On the season dimorphism of certain day lepidoptera, by Herr von Kiesenwetter.—On anthropoid monkeys, by Dr. A. B. Meyer.—On the metamorphosis of the Mexican axolotl, by Dr. B. Vetter.—*Physical and Chemical Section*.—On an improved influence electrical machine, by Carl Dathe.—On a new galvanometer, by Schadowell in Dresden, and on a new Geisler radiometer, by Prof. Neubert.—On the action of chloride of lime upon carbon compounds.—*Mathematical Section*.—On ray-complexes of the second degree, by Dr. Burmester.—On methods of projection, by the same.—On the problem to determine two curves, by Dr. Heger.—On the mechanical conception of chemical processes, by Dr. Hoffmann.—On Riemann's planes, by Dr. Koenigsberger.—On the composition of forces in space, by Herr Mohr.—*Botanical Section*.—On cotton at Pompeii and on some Italian botanical gardens, by Carl Bley.—On some new garden and house plants, by G. A. Petzold.—*General Meetings*.—On excavations and discoveries near Halle, by Dr. Caro.—On the Colorado beetle, by Herr von Kiesenwetter.—On the intellectual life of insects, by the same.—On the axioms of mathematics, by Dr. Koenigsberger.—On researches made in the Caucasus Mountains on earth wax, petroleum, and mud volcanoes, by Dr. Schneider.

Zeitschrift für Wissenschaftliche Zoologie, vol. xxvii, Part 1.—R. Wiedersheim, of Würzburg, devotes a long paper to an account of the structure, disposition, and secretion of the cephalic skin-glands in the tailed amphibia. They appear to possess very generalised characters, and the author regards them as representing the more specialised Meibomian, Harderian, and other glands of higher animals. He claims to have demonstrated the connection of many of his gland-cells with nerve-fibrils, and with branches of ganglion-cells.—August Weissmann has an elaborate contribution on the Daphnidæ, dealing with the formation of the winter eggs in *Leptodora hyalina*. He describes at length the origin of the winter egg, which at first contains several large nutritive cells destined to have all their contents absorbed by one cell to form the nutritive mass for the young germ. Many interesting details are given; but if everything were written at such length, only Germans would survive.—Dr. William Marshall, of Weimar, who has published valuable researches on the Hexactinellid Sponges, has an article on their classification and relationships. His systematic revision of the genera and species will be very useful. He considers the sponges with four-rayed spicules to have been derived from the Hexactinellids, and finds no sharp distinction between the latter and the Ventrilitidæ.—Franz Vejdovsky, of Prague gives an account of the anatomy of *Tubifex umbellifer* (Ray Lankester), for which he creates a new genus, *Psammoryctes*. This interesting fresh-water oligochaetous annelid has been found in Lake Onega, in Victoria Docks, in the Paris Jardin des Plantes, and in Bohemian lakes.

THE sixth part of Reichert and Du Bois Reymond's *Archiv* for 1875 (issued as late as May last) opens with the conclusion of Du Bois Reymond's second memoir on the negative variation of the muscle-current during contraction; it must necessarily be read by all students of this abstruse subject.—R. Hartmann continues his lengthy contributions to our knowledge of the anthropoid apes, by describing several skulls of chimpanzees.—The remaining papers do not call for notice in these columns.—Part 1 for 1876 contains an interesting account, by F. Kurtz, of the minute anatomy of the leaf of *Dionaea muscipula*, accompanied by two plates.—A very long paper by Hermann Munk follows, in this and the following part, on the electrical and motor phenomena of the leaf of *Dionaea muscipula*. The views of Dr. Burdon Sanderson and Prof. Hermann are controverted in many respects; it being contended that the resemblance between the contraction of muscle and that of the leaf is far less complete than the former observer has asserted.—Parts 1 and 2 contain further contribu-

tions by Du Bois Reymond on the negative variation of the muscle-current.—Prof. W. Krause maintains his account of the allantois in the human embryo against Kölliker's denial of its existence in his recent work on Development.—Dr. Grüber gives some more notes of minor anatomical variations in the second part, and Dr. Adamkiewicz commences a further contribution on animal heat, which promises to be of great interest.

No. 32 of the *Journal* of the Quekett Club contains the following papers:—On the principle of illumination in connection with Polarisation, by Mr. W. K. Bridgman; On a new method of mounting microscopical objects, by Prof. H. L. Smith; On a new process of histological staining, by Dr. Francis E. Hoggan; On *Tubicolaria Najas*, by Mr. J. Fullagar; the address of the President, Dr. Matthews, and the Eleventh Annual Report.

SOCIETIES AND ACADEMIES

LONDON

Royal Microscopical Society, October 4.—Mr. H. C. Sorby, president, in the chair.—A paper was read by Mr. Thos. Palmer on a new method of measuring and recording bands in spectra, consisting of a photographed micrometer scale shown in contact with the spectra in the field of view and so arranged as to be capable of adjustment as required. The values indicated by the micrometer were by means of a chart and tables engraved and prepared by the author, easily converted into wave-length measurements.—A paper on the microscopical structure of amber, by Mr. H. C. Sorby and Mr. P. J. Butler, was read by the president.—A paper by Dr. Hinds on a curious effect in connection with the cells in the leaves of *Hypericum Androsæum* was (owing to the lateness of the hour) taken as read.

PARIS

Academy of Sciences, Sept. 25.—Vice-Admiral Paris in the chair. The following papers were read:—Examination of observations presented at various epochs regarding the transits of an intra-Mercurial planet (continued), by M. Leverrier. He notices fourteen observations from 1820 to the present.—Probable consequences of the mechanical theory of heat, by Gen. Favé. The heat from the sun may have a repellent action on the stars. The phenomena of latent heat may probably be explained by supposing that a liquid contains a greater quantity of interposed ether than a solid, and a gas more than a liquid. Tempered steel probably owes its elastic property to an increase of ether. Ozone and oxygen, sulphur and phosphorus, in their different states, perhaps obey the same law. Opaque solid bodies, as well as transparent bodies, have a certain quantity of constituent ether which increases with the temperature.—On the contact of a curve with a system of curves doubly infinite, by Mr. Spottiswoode.—Photomicrographic researches on the effects of reduction of salts of silver in photographic negatives, by M. Girard. Examining with high power a negative developed indistinctly with sulphate of iron or pyrogallol acid, there are found in the clear unimpressed parts, crystals of reduced iodide of silver uniformly distributed; these constitute the *veil*, a cause of frequent unsuccessful.—The carburetted schists of Côtes-du-Nord, by M. Hena.—On the destruction of phylloxera by intercalary cultivation of red maize, by M. Gachez. The insect abandons the vine to attack the roots of the maize.—On the use of bob-bins of very small resistance in employment of telegraph lines for meteorological announcements in stormy weather, by M. Germain.—On the number of branches of curves of a system (μ, ν), which cut a given algebraic curve at an angle of given magnitude, or the bisectrices of which have a given direction, by M. Fouret.—New process of extraction of gallium, by M. Lecoq de Boisbaudran. The gelatinous precipitate given by zinc in the acid solution of the natural mineral is dissolved in hydrochloric acid and treated with sulphuretted hydrogen. Carbonate of soda added in portions to the filtered liquid, enables the oxides with which the gallium is associated to be isolated. These transformed into sulphates, leave in hot water the sub-salt of gallium when the oxide of this metal is precipitated by a prolonged current of carbonic acid. It has then only to be purified.

October 2.—Vice-Admiral Paris in the chair. The following papers were read:—Rectification of an error which mars theorems on systems of two or three segments, making a constant product, by M. Chasles.—Intra-Mercurial planets (continued), by M. Leverrier. He analyses the observations given. We possess data for a first theory which will make it possible to find the planet easily,

and bring it into the regular planetary system. There will not be a transit in September and October for several years.—Note on the transits of hypothetical intra-Mercurial bodies over the sun, by M. Janssen [See separate article].—Industrial application of solar heat, by M. Mouchot. He presented a small solar alembic, with mirror 58 cm. diameter. The boiler contains one litre of wine which boils after half an hour in the sun. The vapour passes in a tube through the bottom of the mirror to the worm where it is condensed. With water in the boiler, and a receptacle for odoriferous leaves or flowers interposed between it and the worm, various essences may be distilled; or the steam may be used to cook vegetables.—Note on Phylloxera, by M. Lichtenstein.—On the theory of solar spots and the constitution of the sun, by M. Gazan. The spots he explains by continuous cooling of the sun, which changes the inferior layers of vapour of its atmosphere into liquid layers. The sun is a large earth, with nucleus in fusion, vapour and gases in a solid envelope, surmounted by a luminous liquid layer, and supporting an atmosphere of vapour and gas.—Discovery of the planet 168; telegram on September 28, by Mr. Joseph Henry, of Washington, to M. Leverrier. Discovered by Mr. Watson at Ann-Arbor.—Discovery of the planet 169 by M. Prosper Henry, by M. Leverrier.—Elements and ephemerides of the planet 164 Eva, by M. Bossert.—Influence of temperature on magnetisation, by M. Gauguin. If a steel bar, with one end in contact with a magnet, be several times heated and cooled between temperatures T and t , the corresponding magnetisms M and m assume variable values. The ratio $\frac{M-m}{m}$ expresses the value of this temporary

variation. This coefficient increases considerably the further you go from the point of contact. The ratio $\frac{M-M_0}{M_0}$ expresses

the value of the permanent variation; M_0 being the magnetisation at ordinary temperature at a given point, before heating, and M that obtained after a series of heatings. This coefficient also increases with distance from the point of contact, and more rapidly. The coefficient of temporary variation is independent (within certain limits) of the intensity of the magnetising force, that of permanent variation increases as the force diminishes.—Chemical reactions of gallium, by M. Lecoq de Boisbaudran.—On a skeleton of Hemiphractus, by M. Brocchi.—On the nature of the phenomena of cell division, by M. Fol. These are studied in Heteropoda, Sea Urchins, and Sagittaria. They are occasioned by a fusion between the protoplasm and the nucleus, beginning at the two opposite poles of the nucleus. When reproduction commences the nucleus ceases to be the centre of the system, and the points of fusion become places of convergence for the currents of sarcode which run on all sides towards these new masses. The new nuclei result from partial liquefaction of these masses. They are then composed of a mixture of the substance of the old nucleus and the protoplasm of the cell.—Siphonation and migration of gases, by M. Bellamy. He describes several phenomena that may be distinguished from osmose proper (through a septum), in which there are conductors of large surface and length almost nil, while here the conductor has a narrow surface and a relatively great length.

GENEVA

Society of Physics and Natural History, August 3.—Prof. J. L. Soret gave an account of the results of a new series of researches in which he is engaged along with M. Edward Sarasin, on the rotatory polarisation of quartz, principally for the ultra-violet rays, to which these measurements have not been before extended. By means of Broch's method and by employing for this purpose the spectroscopic with fluorescent eye-piece devised by M. Soret, a prism of spar and quartz lenses, they have carried their measurements as far as the line R . They have repeated, besides, a great number of determinations for the different lines of Fraunhofer in the visible part of the spectrum. Their results agree in a satisfactory manner for that part with those of the physicists who have preceded them. Moreover, they have found a striking agreement between their results as a whole from A to R and those which result from the formula given by M. Boltzmann for connecting the rotatory power with the wave-length.

VIENNA

Imperial Academy of Sciences, July 20.—The following, among other papers, were read:—Annual period of the insect fauna of Austria and Hungary; II., the beetles (*Coleoptera*), by M. Fritsch. This is in two parts, the first treating of times

of appearance (observation of 5,025 species at sixty-five stations from 1852 to 1874); the second, of annual distribution.—On the vessel-nerves of the Ischiodon, by M. Stricker.—A contribution on the action of the heart, by M. Rokitsansky. This refers to the action of richly-oxygenated so-called apnoic blood in the arteries and veins on the heart.—Microscopic studies on growth and change of hair, by M. Ebner. He shows that the inner root sheath is essential for hair formation, and though broken through by the hair, it grows during the whole hair-vegetation, in the lower part of the follicle with even greater rapidity than the hair. He defends Langer's view that the new hairs are formed in the old follicle and on the old papilla, and describes fully the mechanism of the process.—Researches on the influence of light and radiant heat on the transpiration of plants, by M. Wiesner. Both luminous rays and dark heat rays strengthen transpiration. Ultraviolet rays have probably little action of this kind. With a gas flame, the influence of the dark heat on transpiration is relatively more prominent than with sunlight (in the one case, e.g., 57 per cent. of the action was due to the dark heat rays; in the other, 21 per cent.). The increase of transpiration of green plants through light is due to absorption of the light by the chlorophyll, and transformation of it into heat, whereby the tension of water vapour in the gas-spaces of the plant is increased, and so the relative moisture, and there is an escape of aqueous vapour into the atmosphere. Other colouring substances, such as etiolin, favour transpiration like chlorophyll by their power of changing light into heat, but in less degree.—Contributions to anatomy and morphology of the bud coverings of dicotyledonous woody plants, by M. Wiesner.—On the consequences of action of temperature on germination and germinating power of the seeds of *Pinus picea*, Du Roi, by M. Veltin. The percentage and rapidity of germination warrants no sure inference as to germinating power of seeds. Heating of seeds may have a favourable or an unfavourable influence on the germinating power, according to the physiological state in which the seed is. The duration of the heating has an important influence on development of seeds, inasmuch as long heating at low temperatures can produce the same effect as short heating at high temperatures.—On the theory of waterspouts, by M. Boué. He opposes Faye's view that these are always formed from below downwards. He has witnessed some formed the other way.—M. Viktor v. Lang described an improvement on M. Broch's method of determining the rotation of the plane of polarisation by quartz.—On barometric measurement of heights, by M. Hann. This refers chiefly to influence of moisture on the results of such measurement, and shows how to take exact account of it where measurements of moisture are wanting, at the two stations whose difference of level is to be ascertained. He calculates from the observed air-temperature and an estimated relative moisture.—On the velocity of propagation of sound-waves from explosions, by MM. Mach and Sommer. The experiments show that this velocity rapidly increases with the violence and suddenness of the explosion.

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ERRATUM.—Vol. xiv, p. 506, col. 1, line 17 from top, for *applied*, a *coast*, read *applied to a coast*.